

Amendments to the Claims:

1. (Cancelled)
2. (Previously Presented) The method as claimed in claim 10, wherein the nuclear medical technique includes SPECT or PET.
3. (Previously Presented) The method as claimed in claim 10, wherein the segmenting step is performed by an automatic segmentation routine.
4. (Previously Presented) The method as claimed in claim 10, wherein reconstructing the segmented first image data set is carried out by way of iterative backprojection.
5. (Currently Amended) The method as claimed in claim 4, wherein the iterative backprojection includes:
 - (a) backprojecting the segmented first image data set to form an iteration image;
 - 5 (b) numerically forming an iteration image data set from the calculated iteration image,
 - (c) [[(b)]]-determining a difference between the segmented first image data set and the iteration image data set,
 - (d) [[(c)]]-adding the difference to the segmented first image data
10 set; and
 - (e) [[(d)]]-iteratively repeating steps (a), (b), [[and]] (c), and (d)
until at least one convergence criterion is satisfied.
6. (Currently Amended) A device for selective imaging of body structures, which device includes:
~~first tomographic image data acquisition means for the acquisition of a first image data set,~~

5 ~~second tomographic image data acquisition means for the acquisition~~
~~of a second image data set, which second tomographic image data acquisition means~~
~~have a resolution which is higher than that of the first tomographic image data~~
~~acquisition means;~~

~~backprojection means for image reconstruction of an image from the~~
10 ~~first image data set, and~~

~~selection means for selecting[[,]]-by means of the second image data~~
~~set; a portion of [[the]] a lower resolution first image data set to be reconstructed into~~
~~a first tomographic image, wherein the portion of the first image data set is situated in~~
~~a selected image region based on a higher resolution second image data set; and~~

15 ~~such that the a backprojection means co-operate co-operating with the~~
~~selection means in such a manner that the for reconstructing a first tomographic image~~
~~is calculated exclusively from the portion of the first image data set which [[are]] is~~
~~situated in the selected image region.~~

7. (Cancelled)

8. (Currently Amended) A method for selectively imaging body
structures, comprising the steps of:

 using a first tomography method to acquire a first image data set from
a first spatial region;

5 using a second tomography method to acquire a second image data set,
the second tomography method having a higher resolution than the first tomography
method and the second image data set containing image data that at least partly
coincides in space with image data of the first image data set; and

 reconstructing the second image data set into a second tomographic
10 image;

 segmenting the second tomographic image to define a selected image
region;

 segmenting the first image data set in accordance with the selected
image region segmented from the second image to define a segmented first image
15 data set;

reconstructing ~~[[an]]~~ a first tomographic image exclusively from the segmented first image data set.

9. (Previously Presented) The method for selectively imaging body structures, comprising the steps of:

using a first tomography method to acquire a first image data set;

using a second tomography method to acquire a second image data set,

5 the second tomography method having a higher resolution than the first tomography method and the second image data set containing image data that at least partly coincides in space with image data of the first image data set; and

reconstructing an image from the first image data set;

10 wherein data from the first image data set used in the reconstructing step is selected using the second image data set;

wherein the reconstructing step further comprises the steps of:

selecting a region to be imaged from at least one region represented in the second image data set; and

15 calculating the image reconstruction from image data in a region represented in the first image data set that corresponds to the selected region represented in the second image data set.

10. (Currently Amended) A method of selecting imaging body structures comprising:

acquiring a first image data set from a first spatial region with a tomographic nuclear medical imaging ~~technique-apparatus~~;

5 acquiring a second image data set from a second spatial region with a second tomographic imaging ~~technique-apparatus~~, the first and second spatial regions coinciding at least partially in space;

reconstructing the second image data set into a second image;

segmenting the second image to define a segmented second image;

10 forward projecting the segmented second image to form a segmented second image data set;

associating the segmented second image data set with the first image data set to form a segmented first image data set;

reconstructing the segmented first image data set into a segmented first
15 image.

11. (Previously Presented) The method as claimed in claim 5, wherein the convergence criteria includes the difference dropping below a predetermined convergence value.

12. (Previously Presented) The method according to claim 10, further including:

reconstructing the first image data set into a first image;
registering the at least one of: (1) the first and second images and
5 (2) the first and second image data sets.

13. (Previously Presented) The device as claimed in claim 6, wherein the selecting means includes:

an automatic segmenting means which segments a second image reconstructed from the second image data set, the selected portion of the first image
5 data corresponding to the segmented region of the second image.

14. (Currently Amended) The device as claimed in ~~claim 6~~
claim 13, further including:

registration means for registering the first image data set and the second image data set.

15. (New) The method as claimed in claim 8, wherein the reconstructing step includes:

backprojecting the segmented first segmented image data set into a first iterative image;
5 calculating a first iterative image data set from the first iterative image;

calculating a difference between the segmented first image data set and the first iterative image data set;

adding the difference to the segmented first image data set to generate a corrected first segmented image data set; and

10 reconstructing the corrected segmented first image data set to generate the first tomographic image.

16. (New) The method as claimed in claim 15, further including:

backprojecting the corrected segmented first image data set into a further iterative image;

5 calculating a further iterative image data set from the further iterative image;

calculating a difference between the corrected segmented first image data set and the further iterative image data set;

adding the difference to the corrected segmented first image data set.

17. (New) The method as claimed in claim 9, wherein the reconstructing step further includes:

segmenting the first image data set to generate a segmented first image data set that contains only image data which are of relevance to the selected region;

5 reconstructing the segmented first image data set that contains only the image data of relevance to the selected region to generate a first tomographic image of the selected region.

18. (New) The method as claimed in claim 17, wherein the reconstructing step includes iteratively:

backprojecting the corrected segmented first image data set into a further iterative image;

5 calculating a further iterative image data set from the further iterative image;

calculating a difference between the corrected segmented first image data set and the further iterative image data set;

adding the difference to the corrected segmented first image data set.

19. (New) The method as claimed in claim 9, wherein the image reconstruction is calculated only from a portion of the first image data set that contributes to the selected region.

20. (New) The method as claimed in claim 10, wherein the segmenting step identifies a selected region of the body structures and the associating step selects portions of the first image data set corresponding to the selected region.

21. (New) The method as claimed in claim 20, wherein in the reconstructing step, the reconstructed segmented first image represents the selected region of the body structures.

22. (New) The method as claimed in claim 21, wherein the reconstructing step includes iterative backprojection of the segmented first image data set, such that during the backprojection, backprojected image data is smeared only across the selected region.